PSAPCA

ASH GROVE CEMENT COMPANY

"WESTERN REGION"

June 6, 1995

Mr. Alan T. Butler
Washington Department of Ecology
3190 - 160th Avenue SE
Bellevue, WA 98008-5452

Dear Mr. Butler:

As we discussed several months ago, the Puget Sound Air Pollution Control Agency (PSAPCA) revised Ash Grove Cement Company's Notice of Construction Permit on December 29, 1994. PSAPCA's new Order of Approval eliminated short term mass emission limits and slightly increased short-term concentration limits for several regulated pollutants.

Because the 1990 PSD permit conditions are generally consistent with the 1990 Order of Approval, Ash Grove is still limited by the conditions in the PSD permit. With this letter and technical support document, Ash Grove requests that Ecology revise the PSD permit to be consistent with our 1994 Order of Approval.

Ash Grove recently submitted a preliminary operating permit application to PSAPCA for its review and comment. It would be beneficial to both Ash Grove and PSAPCA if Ecology could expedite its review of this PSD revision to allow the operating permit to reflect the new conditions. Your assistance in this effort would be much appreciated.

Please feel free to call me or Eric Hansen at McCulley, Frick & Gilman, Inc. (206)778-8252 if we can answer any questions or provide additional information.

Sincerely,

Gerald Brown
Manager, Safety and Environment

Attached: PSD Revision, Technical Support Document

626651

3801 EAST MARGINAL WAY, SOUTH • SEATTLE, WA 98134 • PLANT OFFICE: (206) 623-5596 • FAX: (206) 623-2M

Ash Grove Cement Company
PSD Permit Modification

Introduction

On June 19, 1990, Ash Grove Cement West, Inc. (Ash Grove) obtained an Order of Approval from the Puget Sound Air Pollution Control Agency (PSAPCA) to construct and operate a 2,200 ton per day, 750,000 ton per year portland cement plant. On June 20, 1990, the Department of Ecology (Ecology) granted Ash Grove a Prevention of Significant Deterioration (PSD) permit for the same plant.

The plant began commercial operation in November 1992. After two and a half years of operating experience, Ash Grove has identified a number of conditions in the Order of Approval and the PSD permit that it would like to modify. The proposed revisions have already been approved by PSAPCA, and have been incorporated into a new Order of Approval issued December 29, 1994. The 1990 Order of Approval, the 1990 PSD permit, and the 1994 revised Order of Approval are attached as Appendix A. The purpose of this document is to provide support information for Ash Grove's request that Ecology modify the 1990 PSD permit to be consistent with the changes in PSAPCA's recent Order of Approval. We have assumed that our request could be granted administratively.

This document provides an overview of existing emission conditions and the changes requested by Ash Grove. The next section identifies stack parameters relevant to the air quality impact assessment and estimates of the air quality implications of the proposed emission changes. Finally, we provide a brief section discussing the visibility implications of the changes.

Stack Emissions

Ash Grove recently submitted a Notice of Construction and Application for Approval for several minor revisions to the emission limits on the main stack. The changes in stack emissions were requested to accommodate "real world" plant operations that differ from conditions anticipated during the 1990 permitting phase.

The primary changes approved by PSAPCA were (1) minor revisions in the short term concentration limits for CO and NOx; (2) deletion of short-term mass emission limits for CO, NOx, and SO_2, and (3) a relaxation of the hourly concentration limit for SO_2. In addition to these changes, all of which were approved by PSAPCA, Ash Grove is requesting two changes in the PSD permit to make it consistent with the PSAPCA approval order. These changes are (4) changes in short term NOx concentration limits and (5) a minor adjustment in the annual tonnage limit for PM-10.

> **1) Revisions in short term concentration limits.** The 1990 PSAPCA Order of Approval and the 1990 PSD permit set both concentration limits and short term mass emission limits for CO, NOx and SO_2, stated in terms of lbs/hour and ppm. The ppm limits were added late in the permitting process, at EPA's request, to cover situations

when the plant runs at less than 100 percent capacity. The ppm limits were set at levels designed to correlate with the mass limits at maximum output based on *projected* stack flows of 123,340 dscf/minute at 10% oxygen.

As built, actual stack flows from Ash Grove's kiln stack average 102,464 dscf/minute at 8.34% oxygen (117,997 dscf/minute at 10% oxygen) at full production. As a result, pollutant concentrations in the flue gas at full output are higher than anticipated and the ppm limits are more stringent than the short term mass emission limits. Furthermore, a single spike in emissions caused violations of both the mass limits and the concentration limits for each pollutant.

PSAPCA agreed that this was not the intent of the air agencies, and that the ppm limits should be modified to correlate with the short term mass emission limits at full capacity. PSAPCA approved changes in the 1 hour NOx limit from 668 to 700 ppm, in the 24 hour NOx limit from 478 to 501 ppm, and in the 8 hour CO limit from 1000 to 1049 ppm. Ash Grove is requesting the same ppm limits in its PSD permit.

2) Deletion of short term mass emission limits. Given that the revised concentration limits now correlate with the mass emission limits over the full range of production levels, the short term mass emission limits in the PSAPCA approval order and PSD permit no longer serve any purpose. PSAPCA agreed to delete the short term mass emission limits for NOx, CO and SO2. Ash Grove requests the same changes in the PSD permit. These changes are summarized in Table 1.

3) Hourly concentration limit for SO2. PSAPCA also approved a relaxation of short-term SO2 emission rates. The 1990 PSD permit application identified an emission rate of 40 pounds SO2 per hour, the PSAPCA limit under Section 9.07 of the then-current June 1989 Regulation I. The 33 ppm 1-hour limit corresponds to that 40 lb/hr limit - not to a BACT analysis. The 40 lb/hr PSAPCA rule has since been repealed, deleted from the SIP, and replaced by the new federally approved Section 9.07 (dated April 1994).

Subsequent to repealing the 40 lb/hr limit, PSAPCA approved a revision of the short-term SO2 concentration limit from 33 pm to 180 ppm (200 during startup, shutdown or scheduled maintenance) and eliminated the 40 lb/hr mass emission limit from Ash Grove's permit.

The process equipment designer, F.L. Smidth, projected average SO2 emissions of approximately 190 lb/hr, controlled by the process. The 180 ppm limit granted by PSAPCA is equivalent to approximately 218 lb/hr, which allows for variations in the sulfur content of the fuel and raw materials. By comparison, the 1982 PSD permit issued for the Lone Star Cement plant in Concrete, Washington allowed an SO2 limit of 275 lb/hr and Holnam's Seattle plant currently operates with an SO2 limit of 1000 ppm.

Table 1: Summary of Proposed PSD Permit Changes

		Existing PSD Permit Conditions	Proposed PSD Permit Conditions	Increase
NOx				
1-hour	ppm	478 (PSD)/668 (NOC)	700	222
1-hour	lb/hr	590	delete	
24-hour	ppm	None (PSD)/478 (NOC)	501 new	new
24-hour	tons/day	5.06	delete	
Annual	tons	1,846	1,846	0
SO2				
1-hour	ppm	33	180	147
1-hour	lb/hr	40	delete	
Annual	tons	176	176	0
CO				
8-hour	ppm	1000	1049	49
8-hour	lb/hr	538	delete	
Annual	tons	2,353	2,353	0
Main stack PM10				
1-hour	lb/hr	10.6	10.6	0
1-hour	gr/dscf	0.010	0.010	0
Annual	tons	43(PSD)/46(NOC)	46	3
Note: Concentration limits referenced to dry standard conditions at 10% O_2				

Table 1 identifies three inconsistencies between the PSD permit and the Notice of Construction. Because permit conditions were drafted and reviewed with Ecology and PSAPCA staff at the same meeting, we believe the inconsistencies are unintentional errors. Two revisions to the PSD permit are needed to make it consistent with the PSAPCA order:

4) One hour NOx concentration limit. In 1990 PSAPCA set NOx concentration limits of 668 ppm over a one hour average and 478 ppm over a 24 hour average. The PSD permit, however, mistakenly imposed the 478 ppm limit on a one hour average. The PSD permit included no 24 hour concentration limit, but imposed a 5.06 ton/day (422 lb/hr) mass emission limit.

A comparison of the mass emission limits in the PSD permit verifies that the 1-hour ppm limit imposed by the PSD permit was a mistake. The 5.06 ton/day (422 lb/hr) limit corresponds with the annual average emission limit (1,846 tons/year) and 478 ppm. Scaling from the 24-hour limit of 422 lb/hr to the 1-hour limit of 590 lb/hr reveals an increase of 40%, which is the same tolerance PSAPCA's 1990 hourly ppm limit of 668 provided over PSAPCA's 24-hour ppm limit of 478.

Ash Grove requests that Ecology revise the one hour and 24-hour NOx concentration limits in the PSD permit to track the corresponding limits in the revised PSAPCA approval order. This would include adding a 24-hour NOx concentration limit to the PSD permit. See Table 1 to this letter.

5) Annual PM-10 tonnage limit. In 1990 PSAPCA set an annual PM-10 mass emission limit of 46 tpy. That limit remains unchanged in the 1994 revised PSAPCA order. The PSD permit, however, imposed a 43 tpy PM-10 limit. We believe this was an unintentional omission by Ecology, because the same logic Ecology applied to the annual emission limits for gaseous pollutants would apply to the annual PM10 emission limit. Specifically, Ecology increased the annual NO2, SO2, and CO limits to allow for a full year of operation (365 days) rather than the anticipated actual operating capacity of 341 days[1]. Operating at the existing permitted hourly emission rate of 10.6 lb/hr for 365 days would generate 46 - not 43 - tons per year.

Air Quality Assessment

The 1990 PSD permit application included an extensive air quality impact analysis based on 5 years of meteorological data from Beacon Hill monitoring station. Calculated air pollutant concentrations attributable to the Ash Grove stack were small compared with ambient standards and PSD increments. Based on discussions with Ecology in January, Ash Grove has used the results of the 1990 modeling to evaluate the ambient air quality implications of proposed changes

[1] See page 3 of the *Summary of Changes Made to Approval of PSD Application No.PSD-90-03 in Response to Public Comments*, approval conditions 1, 2, and 3.

in emissions. The analysis focused on SO_2 emissions because SO_2 is the only pollutant that might conceivably cause air quality impacts because of increased emissions.

Before updating calculated ambient concentrations, however, it is appropriate to compare preliminary design and as-built stack parameters. Table 2 displays the anticipated and actual stack parameters for the Ash Grove plant. Actual stack parameters are based on source tests by AmTest-Air Quality, Inc. and Valid Results, Inc. The Valid Results source tests were conducted in August 1994 as part of a Relative Accuracy Test Audit. Conducted in September 1994, the AmTest source tests focused on measuring emissions of hazardous air pollutants to assist Ash Grove prepare its operating permit. Although AmTest's testing met EPA specifications for Method 2, the Valid Results flow rate calculations are considered more accurate because they include more test points.

The only substantive difference between anticipated and actual stack characteristics is that the stack inside diameter is greater than originally anticipated. Actual volumetric flow rates and exit temperatures are equal to or higher than expected values. In terms of the resulting plume rise implications, the larger stack diameter is partially offset by the greater flow rates and exit gas temperatures. Based on SCREEN2 computations, the momentum flux is lower due to the larger cross-sectional area of the stack but the buoyancy flux is higher due to the greater flow rates and temperature.

Aside from the stack diameter, Valid Results flow measurements indicate almost perfect agreement with anticipated stack parameters. As a result, the final (stable) plume rise and chi/Q are almost identical to those evaluated in the 1990 PSD permit application. The AmTest results in Table 2 also indicates that the final plume height is higher than originally anticipated, and resulting ambient concentrations in terrain (based on chi/Q) are lower.

Downwash conditions have not been re-examined, but the 1990 analyses revealed only a 10-15% difference in chi/Q for the downwash vs no downwash scenarios. The relatively small increase in concentrations with downwash makes sense given that the most influential structure is the pre-heater tower, which is an open girder support system rather than a solid structure.

This comparison of anticipated and actual stack parameters was conducted solely to indicate that the model results from the 1990 PSD permit application can be extrapolated to evaluate the proposed emission rate changes. The chi/Q's presented in Table 2 indicate actual stack parameters result in concentrations equal to or less than those evaluated in 1990.

Although the 1990 permit analysis focused on the "mill up" scenario, the plume rise is much greater when the mill is down. When the kiln exhaust gases bypass the raw mill, the gases retain their heat rather than transfer it to raw materials. As a result, the volumetric flow rate and gas exit temperature are much greater and plume rise is enhanced. Consequently, ambient pollutant concentrations attributable to the Ash Grove stack are much lower.

Table 2: Comparison of anticipated and actual stack parameters

	Anticipated in 1990 PSD permit	Actual: mill up		Ratio Val.Results: Anticipated	Actual: mill down
		AmTest	Valid Results		AmTest
Stack height (ft)	262	262	262	1.00	262
Stack inside diameter (ft)	9.2	13	13	1.41	13
Exit velocity (ft/sec)	38.7	20.9	18.6	0.48	26.8
Exit temperature (F)	196	221	202	1.03	433
Volumetric flow rate (acfm)	154,200	166,200	148,000	0.96	212,964
Volumetric flow rate (dscfm)	99,358	113,130	97,675	0.98	120,530
SCREEN results					
Stable rise (feet)	495	512	495	1.00	594
Buoyancy flux (m^4/s^3)	44	55	44	1.00	128
Momentum flux (m^4/s^2)	220	121	98	0.45	151
Chi/Q (ug/m^3)	3.2	2.6	3.2	1.00	1.7

Table 3 displays the normalized concentrations determined in the ISC and SHORTZ modeling for the 1990 PSD permit application and the scaling of these concentrations by the proposed PSD emission rates. Short-term SO_2 emission rates are the only change of any significance. The modeling indicates SO_2 concentrations remain well below the PSD increments. Concentrations are also below ambient standards even with the highest measured background included.

Additional Impact Analysis

The visibility implications of increasing short-term NO_x emissions was evaluated in the same manner as in the 1990 PSD permit application, except that a more recent version of VISCREEN was used. These procedures are described in EPA's Workbook for Plume Visual Impact Screening and Analysis, 1988. As discussed in the Workbook", SO_2 emissions are not required input to VISCREEN because over the short distances (<200 km) and stable plume transport conditions typical of plume visual impact screening, secondary sulfate (SO_4) is not formed to a significant degree in plumes." Therefore, the increase in short-term SO_2 emission rates would not affect the VISCREEN analysis.

MFG evaluated the visibility impacts of the plume from the Ash Grove plant at the two nearest Class I areas: the Olympic and Mt. Rainier National Parks. The Olympic National Park is the closest Class I area, at 61 kilometers away. Mt. Rainier National Park is farther, at 71 km.

Consistent with the Workbook, MFG evaluated visibility impacts associated with the Ash Grove plume for an observer located at the nearest point in each national park. Visibility impacts were assessed for the observer looking across the Class I area and from the Class I area outward. Each scenario is evaluated for an observer comparing the plume with the sky and with terrain.

Using the worst-case assumptions inherent in the Level 1 approach, the VISCREEN model indicated that the plume would be perceptible against a sky background for an observer at the nearest point in the Olympic National Park. The model indicated that an observer at the nearest point in the Mt. Rainier National Park would not perceive the plume. Because the analysis indicated that the plume would be perceived under the conservative assumptions inherent in the Level 1, MFG re-evaluated the visibility impacts at the Olympic National Park with the Level 2 approach. Instead of assuming that the plume travels at 1 meter per second during a prolonged period of F stability directly to the park, the frequency distribution of wind speeds, directions, and stabilities observed at Ecology's Beacon Hill monitoring station was examined.

Consistent with the Level 2 procedure outlined in the workbook, MFG determined the meteorological conditions that would be expected to generate the 99th percentile air quality impacts at the park due to emissions from the Ash Grove site. This is accomplished by summing the frequency of occurrence of easterly winds in decreasing degree of stagnation until 1 percent of a year (3.65 days) is accumulated. Table 4 indicates that while stable conditions provide the least dispersion (indicated by the lower values of the product of sigma-z and wind speed "u"), they do not coincide with easterly winds very often. Because easterly winds are uncommon, the 99th percentile was represented by a C-stability and a 1.5 meter per second wind. With these meteorological conditions input into the VISCREEN model, visibility criteria were not exceeded at the Olympic National Park.

Table 3: Summary of Model Results ($\mu g/m^3$)

CHI/Q Calculations	Annual Average	24-hour Average	3-hour Average	1-hour Average
SHORTZ	0.080	0.73		13.4
ISCST with downwash	0.208	0.98	2.7	6.6
ISCST without downwash	0.180	0.87	2.7	6.6
ISCST with downwash for SO2	0.207	0.98	2.6	6.3
ISCST without downwash for SO2	0.178	0.86	2.6	6.3
Max. Normalized Concentration	0.208	0.98	2.7	13.4
Max. Normalized SO2 Concentration	0.207	0.98	2.6	6.3

NOx	Annual
Emission Rate (lb/hr)	422
Emission Rate (g/s)	53.17
Calculated Concentration	11
PSD Increment	25
PSD Significance Level	1
Max.Union Station Background	64
Ash Grove plus Background	75
Ambient Standard	100

SO2	Annual	24-hour	3-hour	1-hour
SO2 Emission Rate (lb/hr)	40	218	218	218
SO2 Emission Rate (g/s)	5	27	27	27
Calculated Concentration	1	27	72	173
PSD Increment	20	91	512	
Significance Level	1	5	25	
Max.Duwamish Background	24	134	306	445
Ash Grove plus Background	25	161	378	618
Ambient Standard	80	365	1300	1048

[1] Concentrations units are $\mu g/m^3$.

Notes: Annual concentrations assume 100% operating capacity and annual average emission rates. Hourly, 3-hour and 24-hour average SO2 emission rates assume mass emission rates based on scaling to the 180 ppm 1-hour emission limit. The annual average emission limit remains unchanged.

TABLE 4: METEOROLOGICAL CONDITIONS FOR PLUME VISUAL IMPACT CALCULATIONS

Stability & WS Class	Wind Speed	Sigma-z	Sz*u	Transport Time	0-6	6-12	12-18	18-24	Frequency	Cumulative Frequency	Distance (x)	a	b
F,1	1.5	83.3	124.9	11.1	0.205	0.1	0	0.228	0.228	0.228	60	27.074	0.27436
E,1	1.5	159.9	239.9	11.1	0.068	0.045	0.045	0.08	0.08	0.308	60	47.618	0.29592
F,2	2.5	83.3	208.1	6.7	0.045	0	0	0.035	0.045	0.353	60	27.074	0.27436
F,3	3.5	83.3	291.4	4.8	0.023	0	0	0.035	0.035	0.388	60	27.074	0.27436
E,2	2.5	159.9	399.9	6.7	0.023	0.013	0.013	0.09	0.09	0.478	60	47.618	0.29592
F,4	4.5	83.3	374.6	3.7	0	0	0	0	0	0.478	60	27.074	0.27436
F,5	6	83.3	499.5	2.8	0	0	0	0	0	0.478	60	27.074	0.27436
D,1	1.5	358.1	537.2	11.1	0.103	0.25	0.058	0.16	0.25	0.728	60	44.053	0.51179
E,3	3.5	159.9	559.8	4.8	0.013	0	0.013	0.013	0.013	0.741	60	47.618	0.29592
E,4	4.5	159.9	719.7	3.7	0	0	0	0	0	0.741	60	47.618	0.29592
F,6	8.5	83.3	707.7	2.0	0	0	0	0	0	0.741	60	27.074	0.27436
D,2	2.5	358.1	895.3	6.7	0.103	0.115	0.08	0.103	0.115	0.856	60	44.053	0.51179
E,5	6	159.9	959.7	2.8	0	0	0	0	0	0.856	60	47.618	0.29592
D,3	3.5	358.1	1253.4	4.8	0.035	0.035	0.08	0.08	0.08	0.936	60	44.053	0.51179
E,6	8.5	159.9	1359.5	2.0	0	0	0	0	0	0.936	60	47.618	0.29592
D,4	4.5	358.1	1611.5	3.7	0.013	0	0.013	0.035	0.035	0.971	60	44.053	0.51179
D,5	6	358.1	2148.7	2.8	0	0	0	0	0	0.971	60	44.053	0.51179
D,6	8.5	358.1	3043.9	2.0	0	0	0	0	0	0.971	60	44.053	0.51179
C,1	1.5	2586.5	3879.8	11.1	0	0.115	0.138	0.013	0.138	1.109	60	61.141	0.91465

APPENDIX A

1990 PSAPCA Order of Approval, 1990 PSD Permit, and 1994 Order of Approval

Puget Sound Air Pollution Control Agency

Registration No. 11339

Notice of Construction No. 3382

Date JUN 19 1997

HEREBY ISSUES AN ORDER OF APPROVAL TO CONSTRUCT, INSTALL, OR ESTABLISH

One dry process 92 TPH (2200 TPD, 750,000 TPY) coal-fired cement plant with baghouse control at 177,000 cfm. The plant consists of the following modifications and additions (see attached): Systems 141, 151, 161, 163, 152, 155, 331, 212, 341, 351, 361, 431, 471, 461, 462, and 463 with 24 baghouses of various sizes.

APPLICANT

NATHAN A FERNOW

ASH GROVE CEMENT WEST INC.

3801 E MARGINAL WAY S

SEATTLE WA 98134-1113

OWNER

ASH GROVE CEMENT WEST INC.

3801 E MARGINAL WAY S

SEATTLE WA 98134-1113

INSTALLATION ADDRESS

ASH GROVE CEMENT WEST INC., 3801 E MARGINAL WAY S, SEATTLE, WA, 98134-1113

THIS ORDER IS ISSUED SUBJECT TO THE FOLLOWING RESTRICTIONS AND CONDITIONS

1. Approval is hereby granted as provided in Article 6 of Regulation I of the Puget Sound Air Pollution Control Agency to the applicant to install, alter or establish the equipment, device or process described hereon at the INSTALLATION ADDRESS in accordance with the plans and specifications on file in the Engineering Division of PSAPCA.
2. Compliance with this ORDER and its conditions does not relieve the owner or operator from the responsibility of compliance with Regulations I, II or III, RCW 70.94 or any other emission control requirements, nor from the resulting liabilities and/or legal remedies for failure to comply.
3. This approval does not relieve the applicant or owner of any requirement of any other governmental agency.
4. This source is subject to Subpart F of 40 CFR 60.
5. The emissions from the main baghouse shall not exceed the following limits:
   a. for carbon monoxide (CO): 1000 ppm @10% oxygen, 538 pph (pounds per hour) 8-hr ave. and 2,353 tpy (tons per year);
   b. for Nitrogen Oxides (NOx): 668 ppm @10%O2 1-hr, 590 pph, 422 pph (24-hr ave), 478 ppm @10%O2-24hr, and 1846 tpy.
   c. for Sulfur Dioxide (SO2): 33 ppm @10%O2-1hr, 40 pph and 176 tpy;
   d. for Particulate Matter (PM): 10.6 pph and 46 tpy.
6. The monitoring and reporting of CO, NOx, SO2, and Opacity shall be done in accordance with Article 12 of Regulation I.
7. Emission of particulate matter from all baghouses shall not exceed 0.010 grains/dscf.
8. All emission testing, monitoring and reporting shall be performed in accordance with PSAPCA requirements.
9. Offsets of PM emissions (deducted from ERC# 107) are required under this NC3382, pursuant to Section 6.08 of Regulation I.

HARRY A. WATTERS
Reviewing Engineer

HW

Anita J. Frankel
Air Pollution Control Officer

CHRISTINE O. GREGOIRE
Director

STATE OF WASHINGTON

DEPARTMENT OF ECOLOGY

4350-150th Ave. N.E. • Redmond, Washington 98052-5301 • (206) 867-7000

June 20, 1990

Mr. Richard Cooke
Vice-President, Operations
Ash Grove Cement West, Inc.
3801 East Marginal Way, South
Seattle, Washington 98134

Dear Mr. Cooke:

The thirty day public comment period for the preliminary permit approval ended at midnight, June 8, 1990. One comment letter was received from the EPA. As a result of the comments and a susequent meeting several changes were made to the approval conditions. The final approval of PSD application for the construction of the Ash Grove Cement West, Inc. Seattle portland cement clinkering plant is enclosed with this letter. Also enclosed is a summary of the changes that have been made to the permit as a result of comments by the EPA.

As you are aware, the approval becomes effective thirty days after signature. Under 40 CFR 124.19, any person who commented on the draft may petition the EPA administrator to review the permit conditions within 30 days after Ecology issues the final decision. Any person who failed to file comments on the draft may petition for administrative review only to the extent of the changes from the draft to the final decision.

If you have questions or comments concerning this matter, please feel free to contact me at (206) 867-7103 at your convenience.

Sincerely Yours,

Alan T. Butler

Alan T. Butler, P.E.
Engineering, Air Program

Enclosures

cc: Mike Landon
Clint Bowman
Joe Williams
Nathan A. Fernow, Ash Grove
Eric Hansen, TRC
Harry Watters, PSAPCA
Ann Pontius, EPA Region X
Bob Bachman, U.S. Forest Service
Shirley Clark, National Park Service,
Christina Van Valkenburgh, City of Seattle
Irv Berteig, King County Building and Land Development

eighteen (18) months.

15. Any activity which is undertaken by Ash Grove or others, in a manner which is inconsistent with the application and this determination, shall be subject to department enforcement under applicable regulations. Nothing in this determination shall be construed so as to relieve Ash Grove of its obligations under any state, local, or federal laws or regulations.

16. Ash Grove shall notify the department in writing at least thirty days prior to start-up by any of the sources affected by the modification.

17. Access to the source by the U.S. Environmental Protection Agency (EPA), department or Puget Sound Air Pollution Control Agency personnel shall be permitted upon request for the purpose of compliance assurance inspections. Failure to allow access is grounds for revocation of this determination of approval.

6/20/90
Date

Joseph Williams
Air Program

SUMMARY OF CHANGES MADE TO APPROVAL OF PSD APPLICATION NO. PSD-90-03 IN RESPONSE TO PUBLIC COMMENTS

A preliminary PSD approval was granted to Ash Grove Cement West, Inc. for construction of a portland cement clinkering plant on May 1, 1990 and the 30-day public comment period began on the date of publication, May 4, 1990. The public comment period has ended with comment letter received from EPA. The final PSD approval has been revised to address the concerns raised in EPA's comments. This document describes EPA's concerns and resultant changes in the permit.

Page 2, Finding 3:

Ecology had originally stated that the emissions of particulate matter and PM_{10} were not subject to PSD review because the proposed Ash Grove facility would be located in a "nonattainment" area for PM_{10}. New source review would be done by PSAPCA, under rules even more stringent than PSD.

That is the way that it would have been done prior to the adoption by EPA of PM_{10} (fine particulate) ambient air quality standards. Due to wording of the original Clean Air Act, the EPA could not declare areas to be in "nonattainment" for PM_{10}. As a stopgap until all of the necessary rule changes could be made to reflect the new PM_{10} standard, the EPA ranked areas by probability of nonattainment of the PM_{10} standard.

The paragraph was changed to explain that the proposed source is in a PM_{10} Group I area, and that there are no "nonattainment" areas for PM_{10} yet. If there were no extenuating circumstances, the Ash Grove facility would have to undergo PSD review for particulate matter and PM_{10}. The applicant would have to show that total particulate emissions would not cause impacts to exceed the particulate PSD increment (increments for PM_{10} have not yet been promulgated by EPA). The applicant would also have to show that no PM_{10} violations would occur as a result of the project, and that the project would use best available control technology (BACT).

Page 2, Finding 4:

The extenuating circumstances referred to earlier are described in this paragraph of the findings. Ash Grove "banked" 223 tons per year of particulate emissions with PSAPCA when it shut down the old cement plant in 1986. The banking agreement with PSAPCA stipulated that approximately 177 tons per year of the credit could apply only to a replacement clinker producing facility. This procedure was done in accordance with EPA rules and is therefore creditable against the proposed increase.

Ash Grove has estimated that the proposed portland cement plant would increase emissions of PM_{10} by 53 tons per year over emissions that are presently

control efficiency, complying with the emission rate limitations without really using BACT. The end result was that the NO_X concentration limit of 478 ppm corrected to ten percent oxygen and standard dry conditions, over the shortest emission rate averaging time, was inserted. We also agreed to waive the concentration limitations during start up, shutdown and malfunction.

The emission limitation of "422 pounds per hour on a 24-hour average" was changed to "5.06 tons per day" to eliminate confusion as to whether the averaging time was a rolling average or based upon a calendar day.

The tons per year limitation was changed. Ash Grove originally proposed to emit 1,726 tons of NO_X per year based upon an estimated 341 days of operation per year. If Ash Grove started running on January 1 and averaged the full 5.06 tons per day of NO_X without any problems requiring shutdown, they would arbitrarily have to shut down on December 7th for the remainder of the year. The tons per year limitation was therefore multiplied by the quantity 365/341 to allow Ash Grove to operate for a full year without interruption, resulting in a NO_X limitation of 1,846 tons per year.

Page 4, Approval Condition 2:

The SO_2 concentration limit of 33 ppm was added for the same reason explained above. The tons per year SO_2 limitation was changed from 164 to 176 tons per year for the reason discussed above.

Page 4, Approval Condition 3:

The CO concentration limit of 1,000 ppm was added for the same reason explained above. The tons per year CO limitation was changed from 2,201 to 2,353 tons per year for the reason discussed above.

Page 5, Approval Condition 4:

Ash Grove personnel stated that it will be virtually impossible for the emission concentrations (ppm) to not be violated during start up, shutdown, and some types of equipment malfunction, even though BACT, increment, and ambient air quality requirements are met. This condition was inserted to allow for start ups, shutdowns and unavoidable malfunctions of the process or control equipment. It should be noted that the purpose of the proposed installation is to convert raw materials into portland cement - at a profit to Ash Grove Cement. Long-term start ups, shutdowns, or malfunctions would not be consistent with this goal. Further, Ash Grove still must meet all of the emission rate limitations, regardless of operating status.

WASHINGTON DEPARTMENT OF ECOLOGY
MAILSTOP PV-11
OLYMPIA, WASHINGTON 98504

IN THE MATTER OF:	]	NO. PSD-90-03
	]	FINAL APPROVAL
Ash Grove Cement West, Inc.	]	OF PSD APPLICATION
Portland Cement Clinkering Plant	]	
Seattle, Washington	]	

Pursuant to the U.S. Environmental Protection Agency (EPA) regulations for the Prevention of Significant Deterioration (PSD) set forth in Title 40, Code of the Federal Regulations, Part 52 and based upon the complete Prevention of Significant Deterioration (PSD) application submitted by Ash Grove Cement West, Inc. and the technical analysis performed by the Department of Ecology (the department), dated April 26, 1990, the department now finds the following:

FINDINGS

1. Ash Grove Cement West, Inc. is proposing to construct a new 750,000 ton per year clinker-producing portland cement plant in the Seattle Duwamish area. A Prevention of Significant Deterioration application was submitted on February 6, 1990 and was determined to be complete on March 26, 1990. A preliminary PSD approval was granted on May 1, 1990 and the 30-day public comment period began on the date of publication, May 4, 1990. The public comment period has ended with one comment received from EPA.

2. The proposed cement plant qualifies as a major source of air pollutants because it is listed as a major stationary source under Title 40, Code of the Federal Regulations, Part 51, Section 166, paragraph (b)(1)(i)(a) and has

8. Best Available Control Technology (BACT) will be used for the control of all air pollutants which will be emitted by the proposed project.

9. The facility as proposed would generate up to 1,726 tons per year of NO_X.

10. The facility as proposed would generate up to 164 tons per year of SO_2.

11. The facility as proposed would generate up to 2,201 tons per year of CO.

12. The facility as proposed would generate up to 17.4 tons per year of volatile organic compounds (VOC).

13. The facility as proposed would generate up to 53 tons per year of particulate, all of which would be finer than 10 microns in diameter (PM_{10}). Ash Grove has withdrawn 58 tons per year of the particulate emission reduction credits held by PSAPCA, therefore there will be no net PM_{10} increase resulting from the proposed project.

14. The project will have no significant adverse impact on air quality.

15. Odors from the facility will be kept to a reasonable minimum.

16. No noticeable effect on industrial, commercial, or residential growth in the Seattle area is anticipated due to the project.

17. Visibility will not be impaired in any Class I area due to the proposed emissions. Screening analyses showed no significant visibility

Reference Method 10 or an equivalent method agreed to in advance by the department. CO emissions shall be measured by a continuous emission monitoring system which meets the requirements of Conditions 9 and 10. CO emissions from the system exhaust stack shall not exceed an annual emission limit of 2,353 tons per year based upon 8,760 hours of operation per year.

4. Emission concentration limitations (expressed in ppm corrected to ten percent oxygen and standard dry conditions) for NO_X, SO_2, or CO shall not apply during start up, shutdown, or malfunction of the process or control equipment directly related to the main stack.

5. PM_{10} emissions from the system exhaust stack shall not exceed 0.010 grains per dry standard cubic foot corrected to ten percent oxygen and standard dry conditions on a one-hour average. Initial compliance shall be measured by EPA Reference Method 5 with the assumption that 100 percent of the particulate collected by this method is finer than 10 microns in diameter or by size-specific particulate matter test procedures approved in advance by PSAPCA, or an equivalent method agreed to in advance by the department. PM_{10} emissions from the system exhaust stack shall not exceed an annual emission limit of 43 tons per year based upon 8,760 hours of operation per year.

6. With the exception of NO_X, SO_2, and CO emissions of any pollutant regulated under the clean air act shall be less than the significant levels in 40 CFR 52.21(b)(23)(i), (July 1, 1988 revision).

7. Within 60 days after achieving maximum production, but not later than 180 days after start-up by any source affected by the modification, Ash Grove shall conduct performance tests for NO_X, SO_2, and CO at that source to be performed by an independent testing firm. A test plan shall be submitted for the department's approval at least 30 days prior to the testing.

3 shall be continuously reported in units of the standard. Main exhaust stack mass flow shall be continuously measured as required to provide data for emissions reporting in units of the standard. Ash Grove may propose for approval by the department an alternative method for providing continuous exhaust stack mass flow and emission rate data. Any alternative proposed shall be, at a minimum, equivalent to a continuous emission rate monitoring system (CERMS) conforming to 40 CFR 60 Appendix B Performance Specification 6, (July 1, 1988 revision).

11. CEMS, CERMS and process data required in Conditions 1 through 3 shall be reported to the Puget Sound Air Pollution Control Authority at least monthly within thirty days of the end of each calendar month and in a format approved by the department which shall include but not be limited to the following:

a. The average daily production of clinker.

b. Process or control equipment operating parameters.

c. Start ups, shutdowns, and the duration and nature of any malfunctions of process or equipment covered under Condition 4.

d. The peak emission concentration and rate in the units of the standard for each day for each pollutant monitored.

e. The average emission concentration and rate in the units and averaging period of the standard for each day for each pollutant monitored.

f. The duration and nature of any monitor down-time.

Puget Sound Air Pollution Control Agency

Registration No. 11339

Notice of Construction No. 5730

Date DEC 29 1994

HEREBY ISSUES AN ORDER OF APPROVAL TO CONSTRUCT, INSTALL, OR ESTABLISH

This Order of Approval No. 5730 supersedes Order of Approval No. 3382 and adds the installation of a 120 ton/hour Clinker Pre-Grind Crusher with a Baghouse at 20,000 cfm, and a Finish Mill High Efficiency Separator Project including two (2) 60 ton/hour High Efficiency Separators with two (2) Baghouses at 77,000 cfm each, two (2) Baghouses at 10,000 cfm each, and one Baghouse at 5,000 cfm.

APPLICANT

GERALD J BROWN

ASH GROVE CEMENT COMPANY (E MARG,)

3801 E MARGINAL WY S

SEATTLE WA 98134-1113

OWNER

ASH GROVE CEMENT COMPANY (E MARG,)

3801 E MARGINAL WY S

SEATTLE WA 98134-1113

INSTALLATION ADDRESS

ASH GROVE CEMENT COMPANY (E MARG,), 3801 E MARGINAL WY S, SEATTLE, WA, 98134

THIS ORDER IS ISSUED SUBJECT TO THE FOLLOWING RESTRICTIONS AND CONDITIONS

1. Approval is hereby granted as provided in Article 6 of Regulation I of the Puget Sound Air Pollution Control Agency to the applicant to install or establish the equipment, device or process described hereon at the INSTALLATION ADDRESS in accordance with the plans and specifications on file in the Engineering Division of PSAPCA.
2. Compliance with this ORDER and its conditions does not relieve the owner or operator from the responsibility of compliance with Regulations I, II or III. RCW 70.94 or any other emission control requirements, nor from the resulting liabilities and/or legal remedies for failure to comply. Section 5.05(e) of Regulation I requires that the owner or operator must develop and implement an operation and maintenance (O&M) plan to assure continuous compliance with Regulations I, II, and III.
3. This approval does not relieve the applicant or owner of any requirement of any other governmental agency.
4. This source is subject to Subpart F of 40 CFR Part 60.
5. PM-10 emissions from each baghouse except the Main Stack baghouse shall not exceed 0.005 grains/dscf over a twenty-four hour period. Ash Grove may demonstrate compliance with this condition by any of the following:
   A. Performing a PSAPCA approved source test according to EPA Method 5 or EPA Method 201A.
   B. Demonstrating no visible emissions for 15 consecutive seconds.
   C. Demonstrating no visible emissions for three consecutive minutes, or
   D. Repairing within 24 hours, any baghouse that has visible emissions for more than three consecutive minutes.
   Compliance shall be determined for visible emissions using EPA Method 22. PSAPCA may require a source test for any baghouse that has sustained visible emissions, unless such emissions are unavoidable under WAC 173-400-107.
6. Except during startup and shutdown of the kiln, scheduled maintenance and for emissions considered unavoidable under WAC 173-400-107, emissions from the main baghouse shall not exceed the most stringent of PSD limits or the following limits:
   A. Carbon monoxide (CO): 1049 ppm @ 10% oxygen (O2), 8-hr average, and 2353 tpy (tons per year):
   B. Nitrogen Oxides (NOx): 700 ppm @ 10% O2 1-hr average, 501 ppm @ 10% O2, 24-hr average, and 1846 tpy.
   C. Sulfur Dioxide (SO2): 180 ppm @ 10% O2 1-hr average, and 176 tpy.
   D. Particulate Matter (PM): 10.6 pph and 46 tpy.
7. During startup and shutdown of the kiln, and during scheduled maintenance on the main baghouse, all of the emission limits stated in Condition 6 apply, except that emissions from the main stack shall not exceed 200 ppm of SO2 corrected to 10% O2 for a one-hour average and 1000 ppm of NOx corrected to 10% O2 for a one-hour average. Appendix A to this order defines the startup, shutdown and scheduled maintenance conditions under which these alternate limits apply.
8. Ash Grove shall monitor and report CO, NOx, SO2, and opacity from the main baghouse according to Article 12 of Regulation I.
9. By May 1, 1995, Ash Grove shall submit to PSAPCA for approval a best available control technology determination for controlling fugitive emissions from the clinker discharge end of the kiln. The evaluation must include start up and shut down.

(cont'd)

10. Ash Grove shall submit a testing plan to PSAPCA for approval within 60 days of startup for testing of the High Efficiency Separator Baghouse.
11. This Order of Approval supersedes and cancels Order of Approval No. 3382 dated June 19, 1990.

FREDRICK L. AUSTIN P.E.
Reviewing Engineer

JAY M. WILLENBERG
Reviewing Engineer

for DENNIS J. McLERRAN
Air Pollution Control Officer

MEJ